

than they do at present to provide better training for our industrial leaders. In London one may hope that this may be effected by inducing certain institutions to specialise in given directions. To take a case in point, the buildings, equipment, and numerical size of the staff of the Central Technical College might be equal to dealing satisfactorily with one branch of engineering or of applied chemistry. At present the college undertakes nearly all branches, and does it remarkably well, considering the difficulties under which it labours. If all the teaching staff for higher work in London were amalgamated, it would still be inferior in quantity—and, probably, in quality for *specialised* work—to that at Berlin; but it would not be, as is at present the case in the more or less isolated institutions, far too small for the work it is trying to do.

In the provinces the problem is more difficult, but not insoluble, if we are all more anxious for the good of the nation than for the glory of our own town or institution. Elementary technical education is needed in all the towns, but technical colleges are wanted in a few great cities only; and even in these populous centres every important branch of technology cannot be taught with efficiency, because, for a long time, there will be too few students to warrant adequate expenditure. Why should Sheffield and Leeds, *e.g.* both attempt the highest work in metallurgy and mining? Might not Sheffield send, say, its mining teachers and students to Leeds for higher work, and Leeds return the compliment by helping to develop the highest possible training in, say, metallurgy at Sheffield?

The case mentioned is only one instance of a principle which the Government ought to seek to establish generally, and to induce local authorities to adopt by offers of suitable grants in aid of what is really a pressing national need, *viz.* the development and improvement of our higher technical training. Each of the great cities might be made a centre for the highest training for one or more of our national industries, and the neighbouring cities should be willing to act as feeders to it in respect of this higher work.

Unless some such policy be adopted, there seems but little chance that we shall ever be able to offer a training equal to that available in Germany. For it would require enormous and wholly unnecessary expenditure to develop into a first-class technical high school dealing with many branches of technology, every technical institution and university college which is at present attempting to give some form of higher technical training.

Above all, let us note that both in Germany and America the flourishing technical colleges are not, as a rule, under the control of the universities, but exist side by side with them as co-equal organisations with different aims. To subordinate higher technical education to ordinary academic control would be to make a mistake which our German and American cousins have carefully avoided. Technical institutions might, however, very well become constituent parts of a university, provided, as has, *e.g.* been arranged at Sheffield, that they retain a sufficient measure of self-government. The scheme of Prof. Riedler, which Dr. Rose quotes with approval, would be a very good basis upon which to make a division between the work of our technical institutions and university colleges which exist in the same area, and, to some extent, overlap one another.

The university college might embrace, as Riedler proposes for the universities of Germany, the faculties of law, theology, medicine, philosophy, languages, history, State science, art, mathematics, and natural science; while the technical institutions would on his plan embrace the faculties of engineering, mining,

forestry, agriculture, military science, and applied chemistry.

Finally, it may be well to quote the words in which Dr. Rose summarises the results of his extensive inquiries:—"The technical high schools cannot boast of the proud traditions of the old universities, nor are their buildings and institutions regarded with those feelings of gratitude and reverence which a long and honourable career in the service of humanity naturally inspires; but in default of this they can point to an almost perfect organisation and equipment for modern requirements, and to a development within the last forty years almost unparalleled in the annals of educational history." May a similar statement be possible ere long in regard to our own higher technical institutions!

J. WERTHEIMER.

THE TENTH "EROS" CIRCULAR.¹

"AS an example of needless duplication, fifty observatories agreed to observe the planet Eros during its opposition in 1900, but so far as known, only two or three have made the reductions needed to render their observations of any value." So wrote Prof. E. C. Pickering in April, in his "Plan for the Endowment of Astronomical Research"; and he is not alone in asking, directly or indirectly, when we may expect to have the result of all the work done at the opposition of 1900-1. The tenth Eros circular, dated June 1, appears at the right moment as a provisional reply. It gives the results of equatorial observations at twelve observatories, all compared with the ephemeris; and two splendid series of photographic observations made at Bordeaux and Paris, completely reduced so as to show not only the comparison of the planet's place with the ephemeris, but a series of places for individual stars such as has never been given before. If these two observatories had done nothing else in the two years elapsed since the plates were taken, they might be congratulated on a fine piece of work. Other results will doubtless follow now that these are in print to act as an incentive, and we need have no fears for the ultimate result.

It is, however, well to remember that the opposition of Eros came upon us at a time when our hands were already more than full with the ordinary work of the astrophotographic catalogue. It was an embarrassing choice whether to put aside the catalogue measures for a time, to finish them before undertaking the Eros work, or to try to do both simultaneously. The various observatories have selected one or other of these alternatives according to the stage which the catalogue work had reached. At Bordeaux and Paris a leisurely programme has been adopted for this work; the French Government has supplied ample means, but the vote has been spread over twenty-five years, and the work will be extended over the same period. It would have been ridiculous to defer the measurement of the Eros plates for any period of this kind, and we imagine the catalogue work has been put aside in order to measure the Eros plates. At Oxford, to take a different case, the catalogue work has been pushed forward rapidly so as to make the best use of the small sum available, and is on the point of completion. The Eros work can then be taken up without undue delay. At other observatories some compromise has doubtless been adopted between these extreme courses. So long as the work goes forward on the lines of least resistance there is no particular need to be anxious; and we welcome the appearance of the tenth circular as an outward and visible sign of the vitality of this research, which some were beginning to accuse of hibernation.

¹ Conférence Astrophotographique Internationale de Juillet 1900. Circulaire No. 10. Pp. 318 Paris, 1903.)

The results already published tempt one sorely to estimate a provisional parallax. Indeed there is no need to resist the temptation if one keeps the results to oneself, and avoids multiplying provisional results in print which only make confusion. An excellent example of reticence has already been set. This much may be said from experience; if anyone indulges himself by studying the results in the tenth circular, he will find no reason to be dissatisfied with the accuracy of the work.

The circular concludes with 100 pages of tables for facilitating the photographic reductions. Such tables may be thrown into an endless variety of forms according to individual taste; and the differences between any two particular arrangements are not of much importance compared with the great advantage of having the tables published. The thanks of everyone who measures photographs are due to M. Loewy for his tables in the tenth circular. H. H. TURNER.

NOTES.

WHEN it was announced, a few months ago, that Prof. von Neumayer, the distinguished meteorologist, was about to retire, on account of advanced age and ill-health, from his post of director of the German Naval Observatory at Hamburg, which was under his control for a considerable number of years, the rumour quickly gained currency in usually well-informed circles that his successor would not be a man of science but a naval officer. This rumour was discredited at the time by many people, but it proves to have been quite correct, for during the Kaiser's recent visit to Hamburg for the purpose of unveiling a statue to the Emperor William I., he summoned Captain Herz, of the Imperial Navy, to his presence, and informed him that he had been appointed to the vacant post with the rank of a Rear-Admiral. As the work of the observatory is necessarily so largely scientific, it may at first sight seem strange that a man, who, no matter how able he may be, is not a man of science, should be placed at its head. A similar arrangement, however, has been made in several other cases in recent years—as, for instance, in the construction department of the Navy, which until quite recently was under the supervision of scientific engineers, but is now in the hands of naval officers—and the explanation given is that a man of science in such a position is so overburdened with administrative work—for which, very possibly, he is not well fitted—that he has little or no time for scientific investigation. The naval authorities have, therefore, decided to utilise their investigators wholly for scientific purposes, and to place the work of organisation and administration into the hands of a naval officer who is a man of practical affairs.

A BUST of the late Sir William Flower, F.R.S., will be formally presented to the trustees of the British Museum by the "Flower Memorial Committee" on Saturday next, July 25. The ceremony will take place in the central hall of the Natural History Museum at 1.15 p.m. The bust will be unveiled by the Archbishop of Canterbury as the representative of the trustees of the museum.

PROF. W. J. MCGEE has been elected chairman, and Dr. J. H. McCormick secretary, of the committee of arrangements for the eighth International Geographical Congress to be held at Washington, D.C., in September of next year.

A FEW weeks ago we recorded the unveiling of a monument of Pasteur at Chartres. We learn from the *British Medical Journal* that on July 12 another monument was unveiled in the commune of Marnes-la-Coquette in the presence

of many well-known men of science. It was in the district of Marnes-la-Coquette that Pasteur established his laboratory for the study of hydrophobia, and it was there that he died.

THE seventy-first annual meeting of the British Medical Association will be held at Swansea on July 28–31, under the presidency of Dr. T. D. Griffiths. After the delivery of the presidential address on July 28, the Stewart prize will be presented to Dr. F. W. Mott, F.R.S. Dr. F. T. Roberts will deliver an address in medicine, and Prof. A. W. Mayo Robson an address in surgery. The scientific work of the meeting will be conducted in eleven sections—medicine, surgery, obstetrics and gynaecology, State medicine, psychology, pathology, ophthalmology, diseases of children, laryngology, tropical diseases; Navy, Army, and ambulance.

THE Wilts Archæological Society held a meeting at Stonehenge on Friday last, and the Rev. E. H. Goddard gave an account of the raising of the leaning stone. Mr. Story Maskelyne, in thanking Sir Edmund Antrobus for his invitation to visit Stonehenge, said that, by raising the leaning stone, the biggest stone of its kind in England, one of the most important pieces of archæological work he had known had been accomplished. People might quarrel about barbed-wire fences and rights of way, but in his opinion the greatest public right in Stonehenge was the preservation of the monument, and that the present owner was doing to the best of his abilities.

THE long excursion of the Geologists' Association will be made from July 28 to August 4. The head-quarters will be at Berwick-on-Tweed, and in the course of the week the coast at Scremerston, Burnmouth, Eyemouth, and St. Abb's Head, and the country inland along the Whiteadder, the Eildon Hills and Melrose, and a portion of the Cheviot Hills will be visited. Silurian, Old Red Sandstone, Lower Carboniferous, various igneous rocks and glacial drifts will be examined under the direction of Mr. J. G. Goodchild, with Mr. R. S. Herries as excursion secretary.

THE death is announced of Mr. J. Peter Lesley, who from 1872 to 1878 was professor of geology and Dean of the Faculty of Science in the University of Pennsylvania, and was recognised in America as one of the most competent experts on coal and iron mining. From an obituary notice in *Science* (July 3) we learn that he was born in Philadelphia on September 17, 1819, and after graduating at the university in 1838, served on the first geological survey of the State, when he paid especial attention to the coal-deposits. On the abrupt termination of the survey in 1841 he passed through a course of theology, was licensed to preach in 1844, and was for some years pastor of a Congregational church at Milton, Mass. His views, however, underwent some changes, and returning to Philadelphia he again took up geological work, making elaborate surveys of several coal and iron fields in different States. For twenty-seven years he was secretary and librarian of the American Philosophical Society, part of the time holding the geological professorship in Pennsylvania, and in 1874 taking charge also of the second geological survey of the State. This last post he retained until 1893, when he retired to Milton. He died on June 1.

A SEVERE earthquake was felt throughout the island of St. Vincent on the morning of July 21.

WE have received the official *Protokoll* of the third meeting of the International "Commission" for Scientific Aeronautics, which was held in Berlin on May 20–25, 1902.